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SENSORWORX SWX-900 Power Pack Controller Instruction Manual

Contents

SENSORWORX®

SENSORWORX SWX-900 Power Pack Controller

Product Information

The Power Pack is a device that transforms incoming line voltage power to Class 2 low voltage as needed by sensors or other control devices. It also switches on/off power to the connected lighting load as directed by the sensors and controls.

Features

- **Compatible with various catalog numbers**: SWX-900, SWX-900-AX, SWX-910, SWX-910-AR, SWX-920, SWX-999
- Provides Class 2 low voltage output
- Switches on/off power to connected lighting load
- Suitable for indoor use only
- RoHS compliant
- Compact size and lightweight
- Blue color
- Mounts easily with 1/2 knockout

Specifications

- **Operating Voltage:** 120/277 VAC
- C**lass 2 Output Ratings**: 18 VDC, 150 mA (SWX-900-AX / SWX-920 only)
- **Connected Device Power**: 80 mA (SWX-900-AX), 150 mA (SWX-920)
- Load Ratings (SWX-900 / SWX-900-AX / SWX-910)
    - 20A @ 120 V General Purpose Plug Load
    - 20A @ 120/277 VAC General Purpose, Tungsten, Magnetic Ballast
    - 16A @ 120/277 VAC Electronic Ballast, LED Driver
- **DC Load Ratings:** 20A @ 28 VDC (MAX), 1A @ 5 VDC (MIN)
- **Motor Load**: 1 HP
- Environmental

- - **Relative Humidit**y: 0-95% Non-Condensing, Indoor Use Only
- Physical
    - **Size:** 3.00 H x 2.25 W x 1.88 D (7.62 cm x 5.72 cm x 4.78 cm)
    - **Weight:** 6.00 oz.
    - **Color:** Blue
    - **Mounting:** 1/2 Knockout

Product Usage Instructions

Mounting Instructions
The Power Pack is designed to attach to electrical enclosures with 1/2 knockouts. Use a lock nut to secure the Power Pack in place.

Installation Notes

- Suitable for plenum use.
- Risk of Electric Shock – More than one disconnect switch may be required to de-energize the equipment before servicing.

The Power Pack has a low voltage wiring chamber which is optional to use. If using the low voltage wiring chamber, connect it to conduit before connecting it to the Power Pack. The conduit should be appropriately supported by other means and should not rely on the low voltage chamber for support.

WARNING: Turn power off at the circuit breaker before wiring.

Wiring
Refer to the following diagrams for standard wiring configurations

Model #: SWX-900

SWX-900 Wiring Diagram

Model #: SWX-900-AX

SWX-900-AX Wiring Diagram

Model #: SWX-910

SWX-910 Wiring Diagram

Model #: SWX-910-AR

SWX-910-AR Wiring Diagram

For multiple sensor wiring, refer to the following diagram

Multiple Sensor Wiring Diagram

CATALOG NUMBERS	DESCRIPTIONS
SWX-900	POWER PACK
SWX-900-AX	POWER PACK WITH AUXILIARY SWITCH INPUT
SWX-910	SECONDARY RELAY PACK
SWX-910-AR	CONTACT CLOSURE PACK
SWX-920	AUXILIARY POWER SUPPLY
SWX-999	LOW VOLTAGE WIRING CHAMBER

OVERVIEW
SENSORWORX power packs transform incoming line voltage power to Class 2 low voltage as needed by sensor(s) or other control device(s). Additionally, they switch on/off power to the connected lighting load as directed by the sensors and controls.

FEATURES

- Powers Low Voltage Sensors Ã Switches Line Voltage Loads
- Electronically Timed Switching Ensures Long Relay Life
- Integrated Test/Programming Button
- Optional Snap-On Attachment Provides Chamber for Low Voltage Wire Connections
- Optional Switch Input for Manual On, Hold On, or Hold Off Operations Ã Plenum Rated (UL 2043)

SPECIFICATIONS

ELECTRICAL
OPERATING VOLTAGE

- 120/277 VAC

CLASS 2 OUTPUT RATINGS

- 18 VDC, 150 mA
- (SWX-900-AX / SWX-920 only)
- Connected device power
- 80 mA (SWX-900-AX) 150 mA (SWX-920)

LOAD RATINGS

- (SWX-900 / SWX-900-AX / SWX-910) 20A @ 120 V –
- General Purpose Plug Load
- 20A @ 120/277 VAC –
- General Purpose, Tungsten, Magnetic Ballast
- 16A @ 120/277 VAC –
- Electronic Ballast, LED Driver

DC LOAD RATINGS

- 20A @ 28 VDC (MAX) 1A @ 5 VDC (MIN)

MOTOR LOAD

- 1 HP

ENVIRONMENTAL

OPERATING TEMP

- 32°F to 122°F (0°C to 50°C) – Standard -40° F/C (with -HE Option)

RELATIVE HUMIDITY

- 0-95% Non-Condensing, Indoor Use Only

ROHS COMPLIANT

PHYSICAL

SIZE

- 3.00" H x 2.25" W x 1.88" D
- (7.62 cm x 5.72 cm x 4.78 cm)

WEIGHT

- 6.00 oz.

COLOR

- Blue

MOUNTING

- 1/2" Knockout

INSTALLATION INSTRUCTIONS

MOUNTING INSTRUCTIONS
Power Packs are designed to attach to electrical enclosures with 1/2" knockouts.

INSTALLATION NOTES

1. For supply connections, use 14 AWG (90°C) or larger wires. Wire all circuits exiting chase nipple as Class 1 circuits.
2. Suitable for plenum use.
3. Risk of Electric Shock – More than one disconnect switch may be required to de-engergize the equipment before servicing.
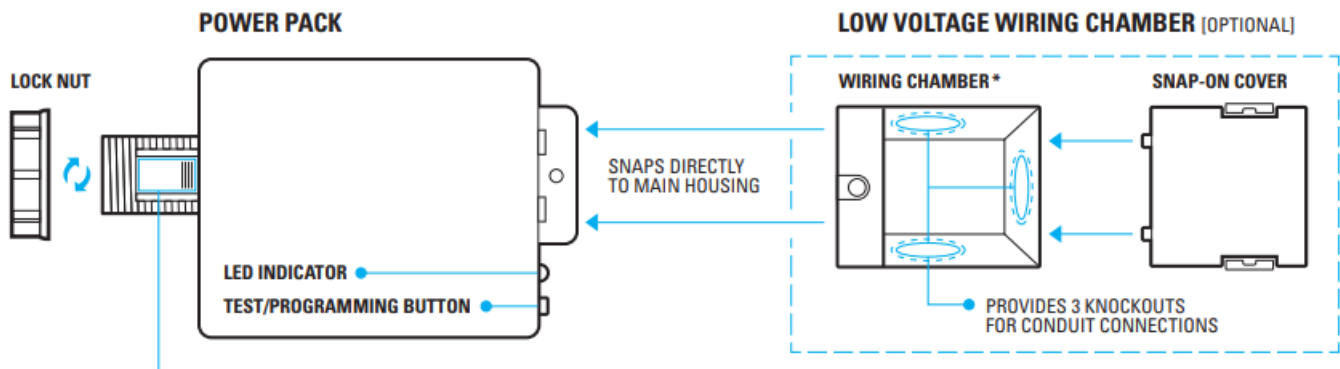
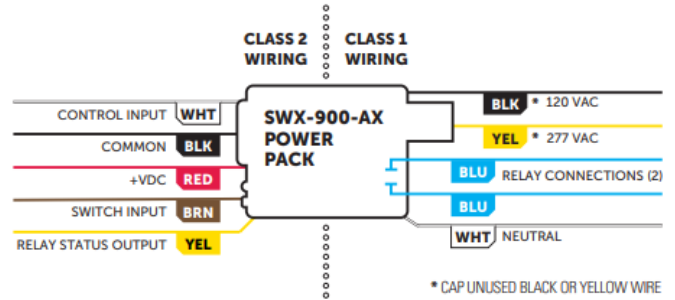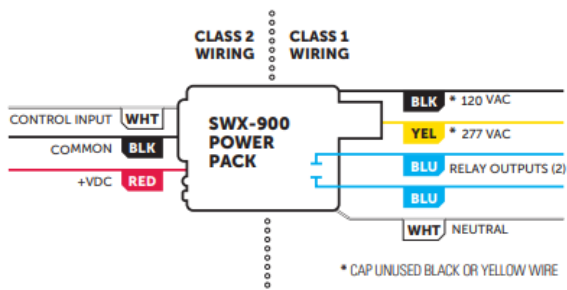CHASE NIPPLE HAS SNAPS THAT ENABLE QUICK INSTALLATION THROUGH ANY 1/2" KNOCKOUT
*CONNECT LOW VOLTAGE CHAMBER TO CONDUIT BEFORE CONNECTING TO POWER PACK. CONDUIT SHOULD BE APPROPRIATELY SUPPORTED BY OTHER MEANS AND NOT USE THE LOW VOLTAGE CHAMBER FOR SUPPORT

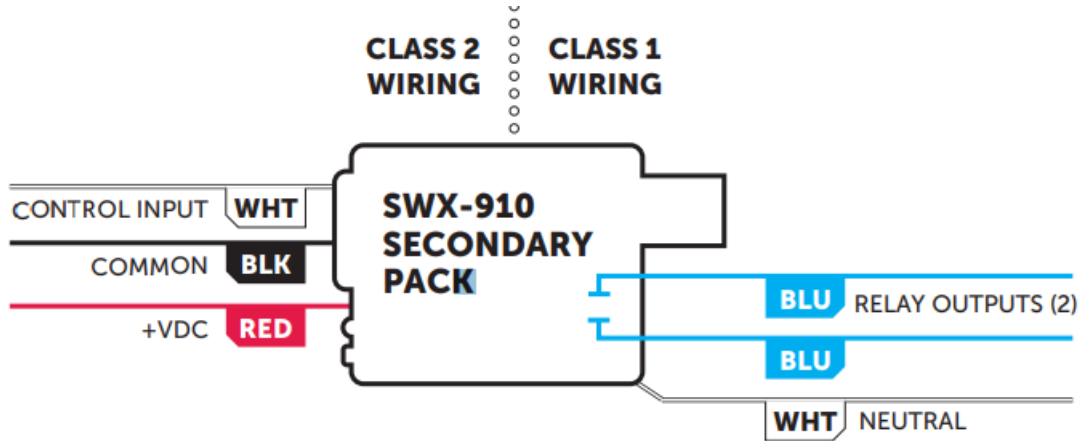**WARNING:** TURN POWER OFF AT THE CIRCUIT BREAKER BEFORE WIRING
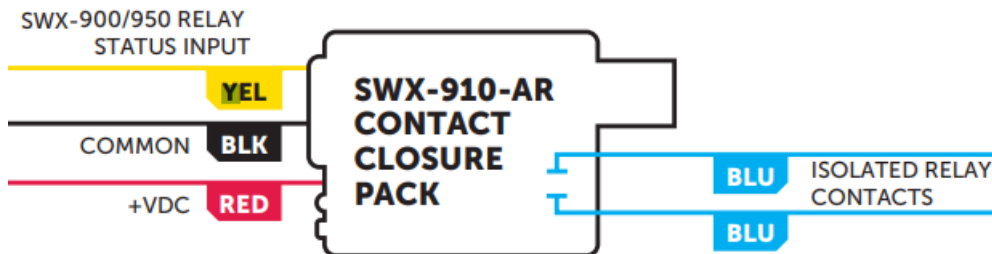
WIRING
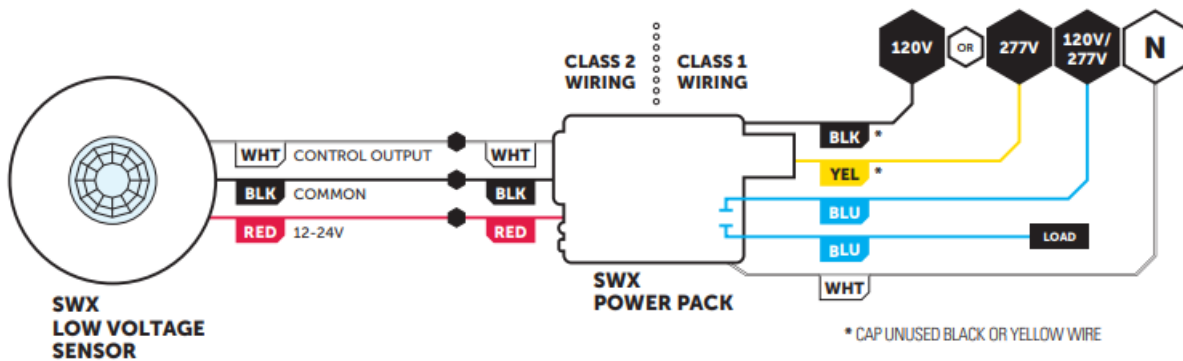
STANDARD WIRING

- **MODEL** #: SWX-900
- **MODEL** #: SWX-900-AX

CLASS 2 WIRING | **CLASS 1 WIRING**

CONTROL INPUT **WHT**
COMMON **BLK**
+VDC **RED**

SWX-900 POWER PACK

BLK * 120 VAC
YEL * 277 VAC
BLU RELAY OUTPUTS (2)
BLU
WHT NEUTRAL

* CAP UNUSED BLACK OR YELLOW WIRE

CLASS 2 WIRING | **CLASS 1 WIRING**

CONTROL INPUT **WHT**
COMMON **BLK**
+VDC **RED**
SWITCH INPUT **BRN**
RELAY STATUS OUTPUT **YEL**

SWX-900-AX POWER PACK

BLK * 120 VAC
YEL * 277 VAC
BLU RELAY CONNECTIONS (2)
BLU
WHT NEUTRAL

* CAP UNUSED BLACK OR YELLOW WIRE

MODEL #: SWX-910

CLASS 2 WIRING | **CLASS 1 WIRING**

CONTROL INPUT **WHT**
COMMON **BLK**
+VDC **RED**

SWX-910 SECONDARY PACK

BLU RELAY OUTPUTS (2)
BLU
WHT NEUTRAL

MODEL #: SWX-910-AR

SWX-900/950 RELAY STATUS INPUT **YEL**
COMMON **BLK**
+VDC **RED**

SWX-910-AR CONTACT CLOSURE PACK

BLU ISOLATED RELAY CONTACTS
BLU

SINGLE SENSOR

CLASS 2 WIRING | **CLASS 1 WIRING**

WHT CONTROL OUTPUT **WHT**
BLK COMMON **BLK**
RED 12-24V **RED**

SWX LOW VOLTAGE SENSOR

SWX POWER PACK

120V OR **277V** **120V/277V** **N**

BLK *
YEL *
BLU
BLU LOAD
WHT

* CAP UNUSED BLACK OR YELLOW WIRE

MULTIPLE SENSOR WIRING

First Diagram

SWX
LOW VOLTAGE
SENSOR

WHT CONTROL OUTPUT
BLK COMMON
RED 12-24V

SWX
LOW VOLTAGE
SENSOR

WHT CONTROL OUTPUT
BLK COMMON
RED 12-24V

SWX
LOW VOLTAGE
SENSOR

WHT CONTROL OUTPUT
BLK COMMON
RED 12-24V

CLASS 2
WIRING

CLASS 1
WIRING

WHT
BLK
RED

SWX
POWER PACK

120V OR 277V 120V/277V N

BLK *
YEL *
BLU
BLU LOAD
WHT

* CAP UNUSED BLACK OR YELLOW WIRE

WIRING CONT.

MULTIPLE POWER PACK WIRING COMMON LINE FEEDS

Second Diagram

SWX
LOW VOLTAGE
SENSOR

WHT
BLK
RED

CLASS 2
WIRING

CLASS 1
WIRING

CONTROL INPUT WHT
COMMON BLK
+VDC RED

SWX-900
POWER PACK

120V OR 277V 120V/277V N

BLK *
YEL *
BLU
BLU LOAD 1
WHT

CONTROL INPUT WHT
COMMON BLK
+VDC RED

SWX-900
POWER PACK

BLK *
YEL *
BLU
BLU LOAD 2
WHT

* CAP UNUSED BLACK OR YELLOW WIRE
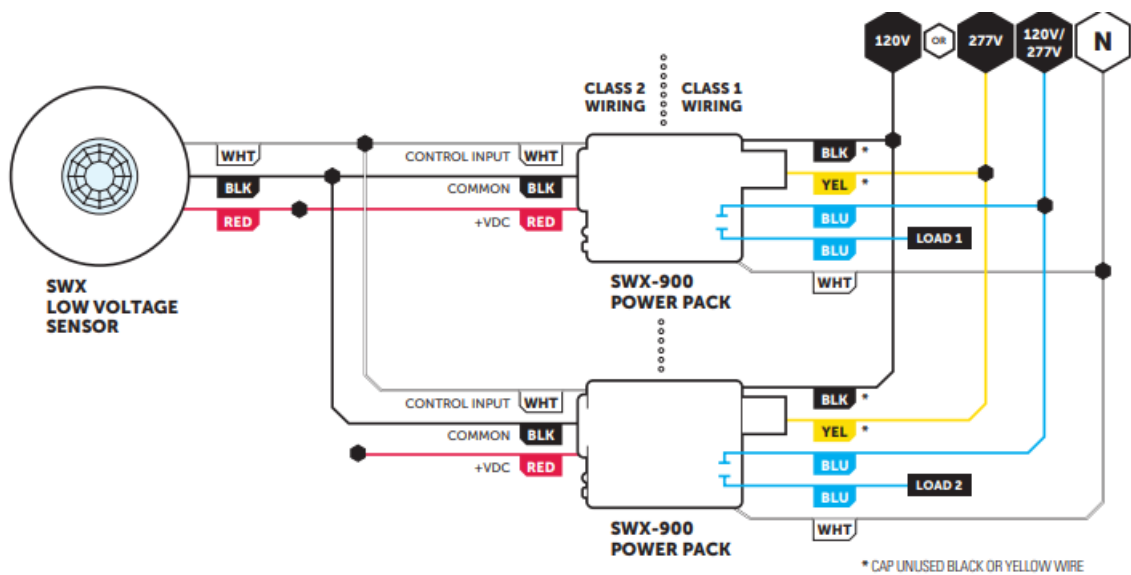
**MULTIPLE POWER PACK WIRING SEPARATE LINE FEEDS**
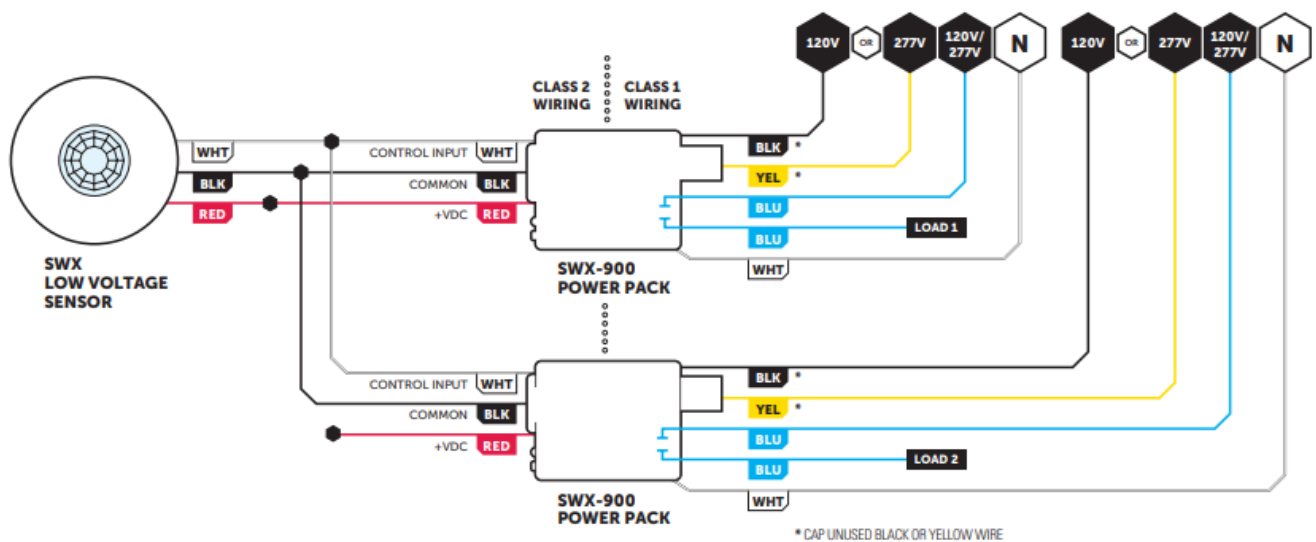
## POWER PACK w/ SECONDARY RELAY PACK WIRING
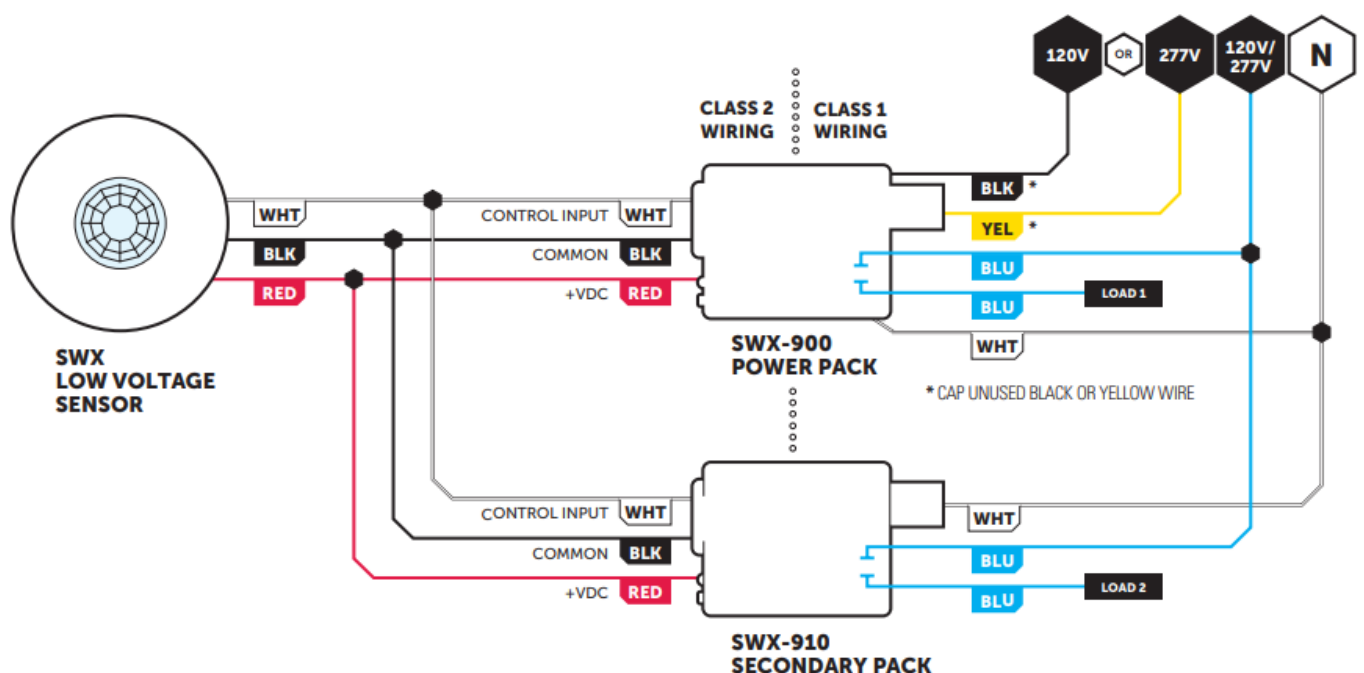
WIRING CONT.

POWER PACK CONNECTED TO SWITCH (requires -AX option)

- Some energy codes require Manual On (also called Vacancy) operation where an occupant is required to initially switch on lighting. The sensor then ensures lights are turned off once the space is unoccupied
- Interfacing momentary switches such as the SWX-801-xx or SWX-803-xx are recommended, however maintained switches can also be utilized
- For momentary switches, the power pack will react on the leading edge of a pulse on the brown input wire
- For maintained switches, any change of state on the brown wire that lasts longer than 0.5 seconds will be read by the power pack as one action
- If no sensor is present, tie power pack low voltage white wire to low voltage red wire
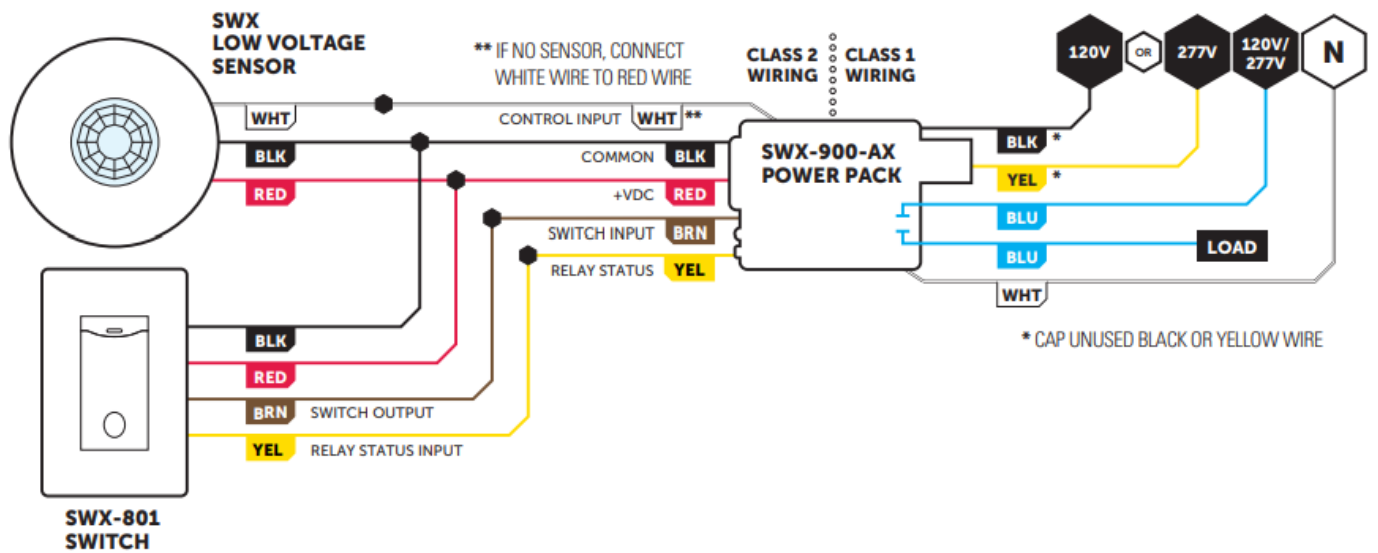
MAINTAINED SWITCH
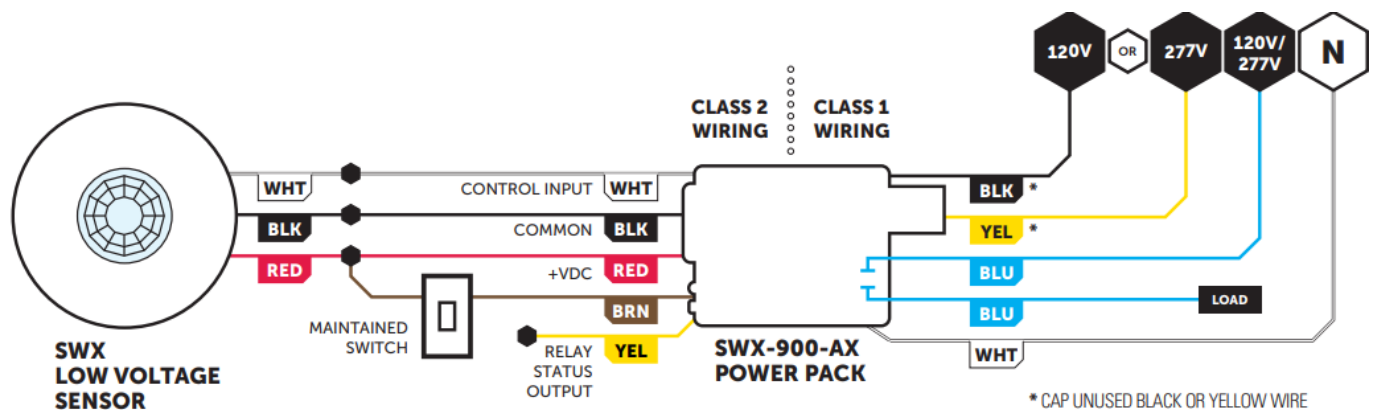
POWER PACK w/ SWITCH SIGNAL FROM EXTERNAL SYSTEM

- Typical for Hold On and Hold Off applications
- BROWN switch input can be activated by external signals +5VDC or higher (i.e. logic high)
- For hold on and hold off applications, switch input can also be configured to activate on logic low Ã If no sensor is present, tie power pack low voltage white wire to low voltage red wire
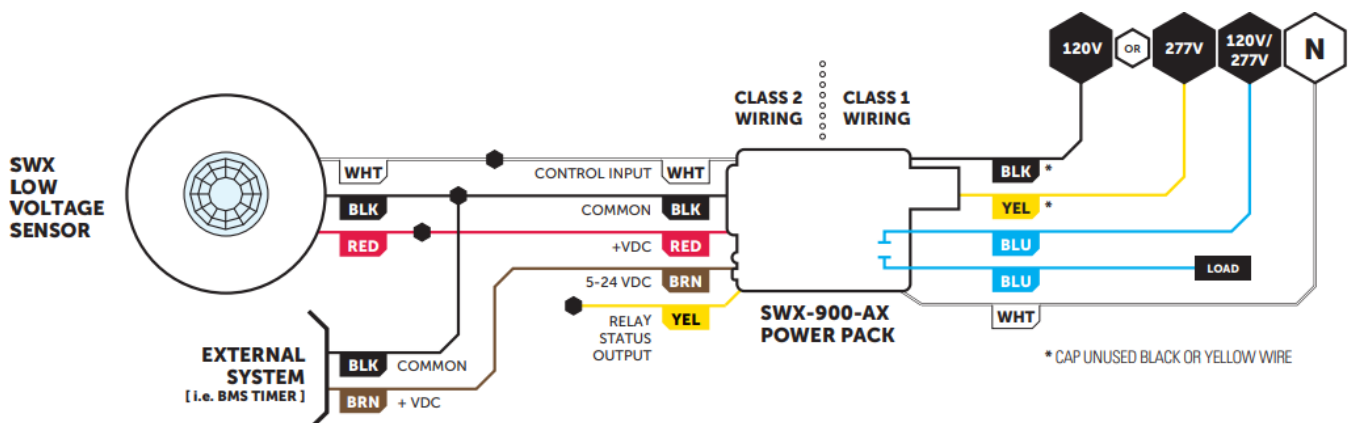
POWER PACK CAPACITY
SWX-900 series power packs can supply power to several occupancy sensors and additional secondary relay

packs. Following the below formula ensures adequate power will be available. Note the SWX-900's relay has already been factored into the formula.

[(# of PIR SENSORS) x4mA] + [(# of DUAL TECH SENSORS) x16mA] + [(# of SWX-910) x70mA] < [(# of SWX-900) x80 mA]

EXAMPLE COMBINATIONS

PIR SENSORS			DUAL TECH SENSORS			SECONDARY PACKS SWX-910			TOTAL POWER REQUIRED		POWER SUPPLIED BY ONE SWX-900
#	POWER REQUIRED	+	#	POWER REQUIRED	+	#	POWER REQUIRED	=		<	
10	40mA	+	0	0	+	0	0	=	30mA	<	80mA
2	8mA	+	0	0	+	1	70mA	=	78mA	<	80mA
0	0	+	4	64mA	+	0	0	=	64mA	<	80mA
3	12mA	+	3	48mA	+	0	0	=	70mA	<	80mA

TESTING & TROUBLESHOOTING

TEST MODE
To test unit and line voltage wiring, press and release the black pushbutton one time (located on the end of the pack opposite the chase nipple). After a short pause, the unit's internal relay (and thus also the connected lighting load) will change state briefly and then return back to its original state if wired and functioning properly.

RESET
To restore factory settings, press and release the push-button 3 times, wait 2 seconds, then press and release the push-button 3 times again.

LED INDICATION

- During normal operation, the LED regularly flashes white as a status "heartbeat".
- The LED will flash blue once when the unit switches. Ã If the LED repeatedly double flashes blue, the power supply is overloaded. This is probably due to having too many sensors or secondary relay packs connected. Remove excess low voltage load from the red wire until blue double flash stops.
- If the LED regularly flashes blue, both blue relay wires are connected to power when the relay is open. This indicates probable miswiring.

CONFIGURATION SETTINGS _____

OPERATIONAL MODES
Standard power packs (model SWX-900) and secondary packs (model SWX-910) close their relays automatically when a connected sensor signals occupancy. Versions with the Auxiliary Switch Input option (e.g. model SWX-900-AX) have several additional modes of operation that are listed below. Auto On/Auto Off (Setting #2) is the default mode.

SETTING #	MODE	DESCRIPTION
2	Auto On / Auto Off Mode * (Occupancy Mode)	Lights come on automatically when occupancy is detected and turn off a utomatically after sensor's time delay expires.
3	Manual On / Auto Off (V acancy Mode)	Lights must be manually switched on via a connected switch, but turn off automatically after sensor's time delay expires.
4	Unused	NA
5	Override On / Logic High	Lights are held on when auxiliary switch input wire is logic high (5-24VD C). Occupancy is ignored.
6	Override On / Logic Low	Lights are held on when auxiliary switch input wire is logic low (< 5VDC). Occupancy is ignored.
7	Override Off / Logic High	Lights are held off when auxiliary switch input wire is logic high (5-24VD C). Occupancy is ignored.
8	Override Off / Logic Low	Lights are held off when auxiliary switch input wire is logic low (< 5VDC). Occupancy is ignored.

TO CHANGE THE OPERATIONAL MODE

1. Read through the above list and note the number of the desired setting
2. Press and release the unit's pushbutton twice, then wait 2 seconds. The White LED will blink back the number of the current setting (e.g. 2 = Auto On / Auto Off).
3. Press the pushbutton the number times equal to the new desired setting (e.g. 3 = Manual On / Auto Off). The White LED will blink back the new setting as confirmation.
4. New setting is saved after White LED blinks confirmation 3 times. If Blue LED double flashes at any time, start process over.

LED OPERATION
To disable the LED from continuously flashing white as a "heartbeat", press and release the push-button 4 times, wait 2 seconds, then press and release the push-button 4 times again.

RELAY LOGIC
The power pack's relay closes in response to occupancy being detected. To reverse this logic (such that the relay opens in response to occupancy), press and release the push-button 5 times, wait 2 seconds, then press and release the push-button 3 times again.

ADDITIONAL OPERATION NOTES

- When in Auto-on/Auto-off mode, if lights are manually switched off when there are still occupants in a space (to show a presentation for example), they will remain off until either
  switched back on manually or the sensor times out once the space is empty.
- When in Manual On / Auto Off mode, if the switch is pressed but no occupancy is ever sensed, the lights will come on for 1 minute and then shut off. If no occupancy sensor is present, tie the power pack's white input wire to red (+VDC).

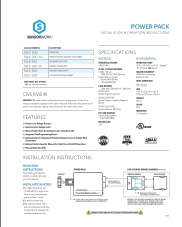## CONFIGURATION QUICK REFERENCE TABLE

FUNCTION	SETTING	DESCRIPTION
2 => Operational Modes	2	Auto-On / Auto Off (Occupancy Mode)
	3	Manual On / Auto Off (Vacancy Mode)
	4	Not Used
	5	Override On, Logic High
	6	Override On, Logic Low
	7	Override Off, Logic High
	8	Override Off, Logic Low
3 => Reset	3	Restore Factory Defaults
4 => LED Operation	2	LED Enabled
	4	LED Disabled
5 => Relay Logic	2	Normal Relay Logic
	3	Inverted Relay Logic

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Five-Year Limited Warranty.
Complete Warranty Terms Located at: **sensorworx.com/warranty** INS900 | REV 001–220125

Documents / Resources

SENSORWORX SWX-900 Power Pack Controller [pdf] Instruction Manual
SWX-900 Power Pack Controller, SWX-900, Power Pack Controller, Pack Controller, Controller

References

- 🔷 **Warranty/Guarantee - SENSORWORX**
- 🔷 **SensorWorx - SENSORWORX**